In the Specification:

Please amend Page 13, line 9, to Page 17, line 2, so as to read as follows:

~~In the following description, the members provided for the respective colors will be collectively referred to as the light exposure unit 1, the developing device 2, the photoconductor drum 3, the cleaner unit 4 and the charging device 5, except for the case where a member corresponding to a specific color is specified for explanation.~~

The light exposure unit~~s~~ 1a, 1b, 1c and 1d ~~is~~ are a laser scanning unit~~s~~ (LSU) each comprising: a write head composed of light emitting elements, such as El (Electro Luminescence) and LED (Light Emitting Diode), arranged in an array, or a laser irradiation section; and a reflective mirror. The LSU is used in the image forming apparatus 100 shown in FIG. 1. The light exposure unit~~s~~ 1a to 1d each forms an electrostatic latent image corresponding to the inputted image data on ~~the~~ a corresponding photoconductor drum 3a, 3b, 3c or 3d by performing exposure according to the image data.

~~The d~~ Developing device~~s~~ 2a, 2b, 2c and 2d develops the electrostatic latent image formed on the corresponding photoconductor drums 3a to 3d into ~~a~~ visible image~~s~~ with toner of the respective colors. The photoconductor drum~~s~~ 3a to 3d are ~~is~~ disposed in the center of the image forming apparatus 100. The electrostatic latent image or the toner image corresponding to the inputted image data is formed on the surface of the photoconductor drum~~s~~ 3a to 3d. After developing and transferring, the electrostatic latent image~~s~~ formed on the surface~~s~~ of the photoconductor drum~~s~~ 3a to 3d, the cleaner unit~~s~~ 4a, 4b, 4c and 4d removes and collects the toner remaining on the photoconductor drum~~s~~ 3a to 3d.

~~The e~~ Charging device~~s~~ 5a, 5b, 5c and 5d uniformly charges the surface of the corresponding photoconductor drum~~s~~ 3a to 3d to a predetermined potential. As the charging devices 5a to 5d, in addition to ~~a~~ roller type charging device~~s~~ or ~~a~~ brush type charging device~~s~~ which comes into contact with the photoconductor drums 3a to 3d, there is a possibility of using a charger type charging device~~s~~ which does not come into contact with the photoconductor drum~~s~~ 3a to 3d. ~~The~~ These charger type charging device~~s~~ are ~~is~~ used in the image forming apparatus 100 shown in FIG. 1.

The transfer and transport belt unit 8 is disposed under the photoconductor drums 3a to 3d. The transfer and transport belt unit 8 includes a transfer belt 7, a transfer belt driving roller 71, a transfer belt tension roller 73, transfer belt driven rollers 72 and 74, transfer rollers 6a, 6b, 6c, 6d, and a transfer belt cleaning unit 9. ~~Hereinafter, the four transfer rollers 6a, 6b, 6c, 6d corresponding to the respective colors are collectively referred to as the transfer rollers 6.~~

The transfer belt driving roller 71, transfer belt tension roller 73, transfer rollers 6a to 6d, and transfer belt driven rollers 72 and 74 support the transfer belt 7 in a stretched manner, and drive and rotate the transfer belt 7 in the direction shown by an arrow relieved in white in FIG. 1.

The transfer rollers 6a to 6d are rotatably supported on the housing of the transfer and transport belt unit 8. Each of the transfer rollers 6a to 6d has a metal shaft with a diameter of 8 to 10 mm as a base, and a surface covered with a conductive elastic material such as EPDM (Ethylene Propylene Diene Monomer) or urethane foam. By using the conductive elastic material, the transfer rollers 6a to 6d can uniformly apply a high voltage of the polarity opposite to the charged polarity of the toner to a recording sheet and transfer the toner image formed on the photoconductor drums 3a to 3d to the transfer belt 7, or the recording sheet which is transported while being attracted onto the transfer belt 7.

The transfer belt 7 is made of an about 100 μm thick polycarbonate, polyimide, polyamide, polyvinylidene fluoride, polytetrafluoroethylene polymer, ethylene tetrafluoroethylene polymer or the like, and placed in contact with the photoconductor drums 3a to 3d. A multi-color toner image is formed by successively transferring the toner images of the respective colors formed on the photoconductor drums 3a to 3d onto the transfer belt 7, or the recording sheet which is transported while being attracted onto the transfer belt 7. The transfer belt 7 has a thickness of about 100 μm, and is formed in endless form using a film.

The transfer belt cleaning unit 9 removes and collects toner for color registration adjustment and toner for process control which are directly transferred onto the transfer belt 7, and toner which adheres to the transfer belt 7 due to contact with the photoconductor drums 3a to 3d.

In order to detect the patch images formed on the transfer belt 7, the registration detecting sensor 21 is disposed at a position where the patch images on the rotating transfer belt 7 pass after passing through the image forming station 80 and before reaching the transfer belt cleaning unit 9. The registration detecting sensor 21 detects the density of the patch images formed on the transfer belt 7 in the image forming station. Here, the patch images formed on the transfer belt 7 are images used for color registration adjustment, and the detail thereof will be described later.

Moreover, in order to detect the temperature and humidity in the image forming apparatus 100, the temperature and humidity sensor 22 is disposed in the vicinity of a processing unit where there is no abrupt change in the temperature and humidity.

In the image forming station 80 of the image forming apparatus 100 having the above-mentioned structures, the light exposure units 1a to 1d performs exposure at a predetermined timing according to the inputted image data, thereby forming an electrostatic latent image on the coresponding photoconductor drums 3a to 3d. Next, the developing devices 2a to 2d develops the electrostatic latent images into a toner images, and the toner images are is transferred to the transfer belt 7, or the recording sheet which is transported while being attracted onto the transfer belt 7.

Please amend Page 18, line 22, to Page 20, line 14, so as to read as follows:

When image data are inputted into the image forming apparatus 100, the light exposure units 1a to 1d performs exposure according to the inputted image data on the basis of a correction value obtained by the color registration adjustment, so that an electrostatic latent images are is formed on the photoconductor drums 3a to 3d. This These electrostatic latent images are is developed into a toner images by the developing devices 2a to 2d. Meanwhile, one sheet of the recording sheets stored in the sheet feed tray 10 is separated by a pickup roller 16, transported to a sheet transport path 11, and temporarily held by resist rollers 14. Based on a detection signal of a registration pre-detection switch which is not illustrated in figures, the resist rollers 14 control the timing so that the leading end of the toner images on the photoconductor drums 3a to 3d are is aligned with the leading end of the image formation region of the recording sheet, and transport the recording sheet to the transfer belt 7 in accordance with the rotation of the photoconductor drums 3a to 3d. The recording sheet is transported while being attracted onto the transfer belt 7.

The transfer of the toner images from the photoconductor drums 3a to 3d to the recording sheet is carried out by the transfer rollers 6a to 6d which is are disposed to face the corresponding photoconductor drums 3a to 3d with the transfer belt 7 therebetween. A high voltage having the polarity opposite to the toner is applied to each of the transfer rollers 6a to 6d, thereby applying the toner images to the recording sheet. Four kinds of toner images corresponding to the respective colors are superimposed successively on the recording sheet transported by the transfer belt 7.

Thereafter, the recording sheet is transported to the fixing unit 12, and the fixing unit 12 fixes the toner images onto the recording sheet with heat and pressure. A transport switching guide 34 switches the transport path so as to transport the recording sheet with the toner images fixed thereon to the sheet discharge tray 33 or to a sheet transport path 35. The recording sheet transported to the sheet transport path 35 is transported along a sheet transport path 37 by transport rollers 36 and 38, and then transported to the sheet discharge tray 15 by sheet discharge rollers 39.

When the transfer to the recording sheet has been completed, the cleaner units 4a to 4d collects and removes the toner remaining on the photoconductor drums 3a to 3d. Moreover, the transfer belt cleaning unit 9 collects and removes the toner adhering to the transfer belt 7, so that a sequence of image forming operations is completed.

Please amend Page 21, line 9-23, so as to read as follows:

The registration detecting sensor 21 comprises a light emitting section 21b having LED, and a light receiving section 21c having PD (photo diode) or PT (photo transistor), inside a rectangular parallelepiped housing 21a. The registration detecting sensor 21 irradiates the transfer belt 7 with light from the light emitting section 21b, and detects reflected light from the transfer belt 7 by the light receiving section 21c, thereby detecting the density of the reference patch image and correction patch image. Next, based on this detection result, the exposure timings of the light exposure units 1a to 1d are is corrected, and the write timings onto the photoconductor drums 3a to 3d are is corrected. Such corrections are similarly performed for other colors subjected to correction, such as M (magenta) and Y (yellow). Although the reference patch image is black (K) in this embodiment, it may be any one of the colors (C, M, and Y). In this case, the black (K) is subjected to correction.

Please amend Page 22, line 20, to Page 24, line 14, so as to read as follows:

The writing section 41 comprises ~~the~~ light exposure unit<u>s</u> 1<u>a to 1d</u>, and controls the light exposure units 1<u>a to 1d</u> to form ~~an~~ electrostatic latent image<u>s</u> corresponding to the inputted image data on the photoconductor drum<u>s</u> 3<u>a to 3d</u>, according to an instruction from the controller 40.

The developing section 42 comprises ~~the~~ developing device<u>s</u> 2<u>a to 2d</u>, and controls the developing device<u>s</u> 2<u>a to 2d</u> to develop the electrostatic latent image<u>s</u> formed on the photoconductor drum<u>s</u> 3<u>a to 3d</u> into ~~a~~ visible image<u>s</u> with toner of ~~each color~~ <u>the respective colors</u>, according to an instruction from the controller 40.

The charging section 45 comprises ~~the~~ charging device<u>s</u> 5<u>a to 5d</u>, and controls the charging device<u>s</u> 5<u>a to 5d</u> to uniformly charge the surface<u>s</u> of<u> the corresponding</u> photoconductor drum<u>s</u> 3<u>a to 3d</u> to ~~a~~ predetermined potential<u>s</u>, according to an instruction from the controller 40.

The transfer section 47 comprises the transfer belt 7, transfer belt driving roller 71, transfer belt tension roller 73, transfer belt driven rollers 72 and 74 and transfer rollers 6<u>a to 6d</u>, and drives the transfer belt driving roller 71 to drive and rotate the transfer belt 7 in a predetermined direction, according to an instruction from the controller 40, thereby transferring the toner images formed on the photoconductor drum<u>s</u> 3<u>a to 3d</u> to the transfer belt 7, or a recording sheet attracted onto the transfer belt 7.

The fixing unit 12 comprises a temperature detector 12a and a heater lamp 12b, and controls the heater lamp 12b to be ON/OFF to have a predetermined temperature, based on a temperature value detected by the temperature detector 12a.

The sheet feed driving section 46 comprises the sheet feed tray 10, pickup roller 16 and resist rollers 14, and controls the pickup roller 16 and resist rollers 14 to feed recording sheets placed on the sheet feed tray 10 one by one to the transfer belt 7, according to an instruction from the controller 40.

The operation section 48 comprises various button switches, such as a cursor key and a ten-key, and receives inputs concerning the number of sheets of image formation and an adjustment of density of image formation desired by the user. Moreover, it is possible to give an instruction to execute the color registration adjustment process through this operation section 48.

Image inputting apparatuses, such as a scanner device, a facsimile device and a personal computer, are connected as external devices to the communication port 20 as the need arises. Image data inputted from such an external device is temporarily stored in a graphic memory which is not illustrated in figures, and an electrostatic latent images corresponding to the image data stored in the graphic memory is formed on the photoconductor drums 3a to 3d, according to an instruction from the controller 40.

Please amend Page 35, line 9, to Page 37, line 3, so as to read as follows:

FIG. 7A is a graph showing the relation between the detection position of the registration detecting sensor 21 and the detected value. When changes in the superimposed state of the reference lines and correction lines are detected in the sensor read range D (in this embodiment, the diameter D = 10 mm) of the registration detecting sensor 21 and the detected values are shown in a graph, as shown in FIG. 7A, the state in which the reference line and correction line perfectly overlap, i.e., a point where the detected value is a maximum (a correction value of "54" in this example), is detected as the agreement point by detected value V1. However, there is a possibility that this agreement point is not a true agreement point, and any one of other misregistrations of +11 dots (correction value "65"), +22 dots (correction value "76"), +33 dots (correction value "87"), +44 dots (correction value "98"); -11 dots (correction value "43"), -22 dots (correction value "32), -33 dots (correction value "21"), and – 44 dots (correction value "10") may be the true agreement condition. In other words, any one of these nine points is the true agreement condition, and, in this stage, it is only possible to predict candidates of the true agreement point. Therefore, even when the exposure timing of the light exposure units 1a to 1d for forming the correction line is are corrected using a correction value at which the detected value of the registration detecting sensor 21 is a maximum, there is still a possibility that the resulting state is not the state where the reference color component images subjected to adjustment (correction) are perfectly superimposed.

[Second Color Registration Adjustment]

Therefore, in order to find a correction value to be the true agreement point from the correction value ("54") obtained in the first color registration adjustment and predicted values that can be obtained from this correction value, the second color registration adjustment is performed to narrow down the candidates of the true agreement point for the first time. In this second color registration adjustment, based on the obtained correction value "54", the candidates of the true agreement point are narrowed down from four predicted values including the obtained correction value "54" (for example, "21", "32", "43" and "54"). Here, the four predicted values are not limited to the values mentioned above, and any four successive predicted values may be used. In the second color registration adjustment, based on the timing corresponding to the maximum correction value obtained in the first color registration adjustment, writing onto the photoconductor drums 3a to 3d is respectively performed by the exposure of the light exposure units 1a to 1d, and the reference patch images and the correction patch images are formed on the transfer belt 7.

Please amend Page 38, line 25, to Page 39, line 11, so as to read as follows:

Furthermore, in order to find which of these two correction values is the true agreement point, the third color registration adjustment is performed. In the third color registration adjustment, based on the correction value ("21") obtained in the second color registration adjustment, a determination is made on the two predicted values including "21" ("21" and "65"). In the third color registration adjustment, based on the timing corresponding to the maximum correction value obtained in the first color registration adjustment, writing onto the respective photoconductor drums 3a to 3d is performed respectively by the exposure of the light exposure units 1a to 1d, and the reference patch images and the correction patch images are formed on the transfer belt 7.

Please amend Page 41, lines 5-13, so as to read as follows:

As described above, by performing the color registration adjustment in three steps to predict correction values that may be the agreement point and narrow down the predicted candidates of the agreement point, it is possible to efficiently and easily align a reference color component image and a color component image subjected to adjustment (correction) in perfect register in wide range of color registration adjustment, find an exposure timings of the respective light exposure units 1a to 1d for forming the color component image subjected to correction, and perform the adjustment (correction).

Please amend Page 49, line 23, to Page 50, line 4, so as to read as follows:

Further, after replacement or maintenance of processing units such as the photoconductor drums 3a to 3d and developing units 2a to 2d, or when there is noticeable misregistration, a user can force the color registration adjustment. In these cases, it is possible to select through the operation section 48 whether all of the first, second and third color superimposition adjustments are to be performed or only the first color registration adjustment is to be performed.